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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,086

09/05/2003

Yong-Chul Park

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EXAMINER

WEINER, LAURA S

ART UNIT

PAPER NUMBER

1745

MAIL DATE

DELIVERY MODE

08/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/656,086

Applicant(s)

PARK ET AL.

Examiner

Laura S. Weiner

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-19 and 31-34 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-13 and 31-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-19, 31-34 in the reply filed on 12-20-05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The elected species was an electrolyte comprising an additive comprising a sulfone-based compound of Formulas (1), (2) or (3), a C3-C30 organic peroxide of claim 7 and an organic solvent of at least one of carbonates, esters, ethers or ketones where the carbonate is cited in claim 13. Another species was searched which was an electrolyte comprising an additive comprising a sulfone-based compound of Formula (3), an azo-based compound of claim 8 and an organic solvent of at least one of carbonates, esters, ethers or ketones where the carbonate is cited in claim 13. After searching a patent was found teaching the first species. Claims 2, 20-30 have been cancelled. Therefore, claims 1, 3-13, 31-34 have been examined.

2. Claims 14-19 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention and species, there being no allowable generic or linking claim.

Response to Arguments

3. Applicant's arguments with respect to claims 1, 3-13, 31-34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4. Claims 3-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al. (US 2001/0009744).

Kim et al. teaches an electrolyte for a lithium secondary battery comprising a non-aqueous solvent and a sulfone based organic compound represented by Formula (I), (II) and (III). Formula (I) is the exact formula claimed as Formula (I). Kim et al. teaches on page 3, [0031], that the electrolytes of examples 1-10 were prepared by adding 1 M LiPF₆ to a non-aqueous organic solvent comprising EC and DMC and 1-5 wt% of a sulfone based compound such as methyl sulfone, vinyl sulfone, phenyl sulfone, etc.

5. Claims 3-5 are rejected under 35 U.S.C. 102(e) as being anticipated by Noh et al. (7,223,500).

Noh et al. teaches in columns 15-17, claims 1 and 16, an electrolyte of a lithium secondary battery comprising lithium salts, a first organic solvent, a carbonate-based additive and further comprising an organic sulfone-based compound of formula (3). Formula (3) is the exact same formula of claimed formula (I). Noh et al. teaches in column 17, claim 19 that the sulfone-based compound is vinyl sulfone, methyl sulfone,

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etc. and teaches in claims 20-21 that the sulfone-based compound is added in an amount of 0.01-6 wt%.

6. Claims 1, 3-7, 9-13, 31-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (7,105,250).

Kim et al. teaches in columns 12-14, claims 1, 6, 9-13, a nonaqueous electrolytic solution comprising a lithium salt, an organic solvent, a halogenated benzene compound, further comprising a polyester (meth)acrylate or a polymer of the polyester (meth)acrylate and further comprising 0.3-5 parts by weight of an organic peroxide such as isobutyl peroxide, lauroyl peroxide, benzoyl peroxide, etc. and further comprising a methyl sulfone, vinyl sulfone, etc. in an amount of 0.1-10 parts by weight. Kim et al. teaches in column 9, lines 50-55, that the nonaqueous electrolyte comprises EC/EMC/PC/FB with 1.15M LiPF₆. Kim et al. teaches in column 10, example 1, that the positive electrode comprises LiCoO₂. Kim et al. teaches in column 8, lines 48-53, that the anode comprises a lithium metal, a carbon material or a graphite,

Claim Rejections - 35 USC § 103

7. Claims 1, 3-13, 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. (7,205,073).

Kim et al. teaches in column 12, example 1, an electrolyte comprising EC/EMC/PC/FB, 1.15 M LiPF₆, 3 wt% chloroanisole and 3 wt% of polyester hexaacrylate compound. The positive electrode comprises LiCoO₂ and the negative

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electrode comprises mesocarbon fiber (MCF). Kim et al. teaches in column 13, example 4, that the electrolyte comprises example 1 but 0.5 wt% of vinyl sulfone was included. Kim et al. teaches in column 14, lines 15-21, that the electrolyte comprises example 1 but 0.03 wt% of 2,2'-azobisisobutyronitrile was added.

Kim et al. teaches the claimed invention except does not specifically teach that the vinyl sulfone and the 2,2'-azobisisobutyronitrile were in the electrolyte.

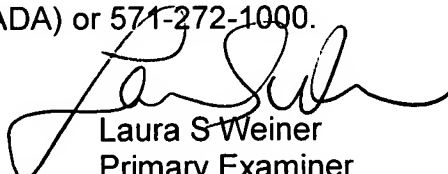
It would have been obvious to one having ordinary skill in the art at the time the invention was made to use both additives, vinyl sulfone and 2,2'-azobisisobutyronitrile in the electrolyte taught by Kim et al. because it is prima facie obvious to combine two compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. See *In re Kerkhoven*, 205 USPQ 1069; *In re Susi*, 169 USPQ 423.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Laura S. Weiner whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Laura S. Weiner
Primary Examiner
Art Unit 1745

July 30, 2007